The Puget Sound Modeling System: Methods for nowcasting and forecasting Puget Sound hydrodynamics.

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The Puget Sound Marine Environmental Modeling (PSMEM) partnership has implemented a "nowcast" system of Puget Sound circulation, using a three- dimensional hydrodynamic model based upon the Princeton Ocean Model of Blumeberg and Mellor (1987). The model runs daily, and is forced with 1) mapped atmospheric conditions from the University of Washington's MM5 regional weather forecast model, 2) river inflow from USGS real-time gauge measurements and 3) boundary conditions for tidal elevation, temperature and salinity across its open boundaries in the eastern Strait of Juan de Fuca. For tidal elevation, a synthetic model best fitted to reproduce tidal response within the Sound, is used, and we force temperature and salinity values with a climatological boundary condition based upon data from the Joint Effort for Measurement of the Straits (JEMS). To assess model performance, we compare predicted tidal heights with tide gauge data from several sites around Puget Sound, and compare ADCP field measurements obtained from the MIXED (Model/measurement Integration Experiment) program in Carr Inlet during the spring of 2003. For daily nowcasts of current conditions in Puget Sound, please see http://tima.ocean.washington.edu.